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**From:** Dan Johnson [DanJohnson@florencecopper.com]  
**Sent:** 10/31/2018 2:38:22 PM  
**To:** Albright, David [Albright.David@epa.gov]  
**CC:** Rumrill, Nancy [Rumrill.Nancy@epa.gov]; Maribeth E. Greenslade [Greenslade.Maribeth@azdeq.gov]  
**Subject:** Installation of Well M57-O  
**Attachments:** ATT00001.txt; M57-O Permitted Design.pdf; FIG 2 M57-O\_WellDesign\_Asbuilt-M57-O.PDF

Mr. Albright,

When Nancy Rumrill and I spoke recently, she had a question about the installation of well M57-O. Below is the summary of that well installation:

M57-O is a Supplemental Monitoring Well as designated by the Florence Copper PTF UIC permit. The well was predesigned, and the proposed design and estimated formation contact depths was included in Appendix B of the permit. The well was constructed with the screened interval completed at the elevations shown in Appendix B of the permit. The actual bedrock contact is deeper than estimated at that location, however there was no indication in the permit language for the screened interval to be adjusted based on field observations. The contact between the LBFU and the Bedrock Oxide Unit is at 545 feet at the M57-O location and the well is screened from 523 to 1200 feet which was as close to the permitted screen design (525-1200 feet) as could be achieved in the field. As noted in section L.2.5.2 of Appendix B, the bottom of the design grouted interval for operational and supplemental monitoring wells was not required to meet the same exclusion zone requirements as the mine block wells:

*"Once the well casing, screen, and filter pack have been installed in the boring, cementing of the upper portion of the well casing, from the bottom of the bedrock exclusion zone (or the bottom of the design grouted interval in the case of the operational and supplemental monitoring wells) to ground surface, will be accomplished by pumping a cement slurry down a tremie pipe positioned with the pipe's lower end near the bottom of the exclusion zone, forcing the cement to fill the annular space between the borehole and casing from the bottom up to the surface."*

Consequently, this well was completed at the depths proposed in the permit application. As constructed, this well will detect water quality impacts originating in both the LBFU and/or the oxide zone at this location.

Please let me know if you need any additional information on this well installation.

Best Regards,

**Dan Johnson** VP | General Manager



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